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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/799,652 | 03/15/2004 | Jin-sung Lee | 249/454 | 8579 |

27849 7590 09/17/2007

LEE & MORSE, P.C.
3141 FAIRVIEW PARK DRIVE
SUITE 500
FALLS CHURCH, VA 22042

| EXAMINER | |
|---|---|
| RAHIM, AZIM | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3744 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 09/17/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/799,652 | LEE ET AL. | |
| | Examiner | Art Unit | |
| | Azim Rahim | 3744 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/21/2004,3/7/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6,10,11,21 are rejected under 35 U.S.C. 102(b) as being anticipated by Hisai (US 2002/0139523).

Regarding claim 1, Hisai discloses a baking system (fig. 1) including a plate for receiving a wafer to be baked (thermo processing plate 11, [0028]), a heater for heating the plate (heater 17 heating a working fluid to expand throughout thermal processing plate 11, [0032]), and a cooling apparatus for cooling the plate (cooling plate 21, [0033]), the cooling apparatus comprising: a cooling element for cooling the plate using vaporization of a coolant therein (fig. 4, [0041], vaporization of the cooling fluid), the cooling element arranged in proximity to the plate with the heater disposed therebetween (explicitly shown in figs. 2 and 4); a coolant storage tank for supplying the coolant to the cooling element when the plate is cooled and for storing the coolant when the plate is heated (coolant supply part 32, [0040]); and a thermostatic element (heater 17) for maintaining a temperature of the coolant supplied into the cooling element constant when the plate is cooled (the heater 17 can keep the cooling water flowing

through cooling plate 21 at a constant temperature, also the water inside of champ\ber 13 can also serve as a cooling fluid due to the cooling of the water via cooking plate 21).

Regarding claim 2, Hisai discloses wherein the coolant storage tank (chamber 13) comprises a coolant flowing element (heater 17) for flowing the coolant into the cooling element when the plate is cooled (the heater 7 is capable of cooling the thermo processing plate 11 by being powered off during cooling, thus causing the water inside 13 to cool).

Regarding claim 3, Hisai discloses wherein the thermostatic element comprises: a cooling water storage tank for circulating cooling water through the cooling element (coolant supply part 32, [0040]); and a cooling water supply pipeline (supply pipe 25), which is a path of the cooling water (explicitly shown in fig. 1), that extends into the cooling element and provides flow communication between the cooling element and the cooling water storage tank (explicitly shown in figs. 1 and 4).

Regarding claim 4, Hisai discloses wherein the cooling water supply pipeline has a valve (valve 34) between the cooling water storage tank and the cooling element (explicitly shown in fig. 1).

Regarding claim 5, Hisai discloses a coolant supply pipeline (supply line 25) for providing flow communication between the coolant storage tank and the cooling

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 7-9,12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hisai as applied to claims 1-3 above, and further in view of Ikeda et al. (US 6,256,201).

Regarding claims 7-9, Hisai discloses all the limitations as described above, except wherein the cooling element is a heatpipe having a ceiling portion and internal side portions.

Ikeda et al. teach wherein the cooling element is a heatpipe (heatpipe A) having a ceiling portion and internal side portions (explicitly shown in fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the baking system of Hisai to include the heat plate as taught by Ikeda et al. in order to expediently cool a heat plate, with the advantage of a larger cooling cross-sectional area.

Regarding claims 12-14,18-20, Hisai discloses all the limitations as described above,

element (explicitly shown in fig. 1). Also note that the compressed air from compressed air supplu 31 can also serve as a coolant based on the cooling of the water using the compressed air [0048].

Regarding claim 6, Hisai discloses wherein the coolant supply pipeline has a valve (valve 33) between the coolant storage tank and the cooling element explicitly shown in fig. 1).

Regarding claim 10, Hisai discloses wherein the coolant flowing element is a heater disposed adjacent to the coolant storage tank (heater 17 disposed inside chamber 13, shown in fig. 1).

Regarding claim 11, Hisai discloses wherein the coolant flowing element is a heater integrated with the coolant storage tank in a single body (heater 17 disposed inside chamber 13, shown in fig. 1).

Regarding claim 21, Hisai discloses wherein the coolant is water [0031 lines 6-7].

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

except wherein the heatpipe comprises a wick on the ceiling portion and internal side portions of the heatpipe.

Ikeda et al. teach wherein the heatpipe comprises a wick (wick 7) on the ceiling portion and internal side portions of the heatpipe (explicitly shown in fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the baking system of Hisai to include the wick as taught by Ikeda et al. in order to advantageously enlarge an evaporating area of a working fluid (col. 8 lines 5-14).

Regarding claims 15-17, Hisai discloses all the limitations as described above, except a wick plate having a plurality of planar wicks installed on the ceiling portion of the heatpipe; and a wick formed on the internal side portions of the heatpipe to guide the coolant to flow toward the wick plate.

Ikeda et al. teach a wick plate (top portion of wick 7) having a plurality of planar wicks installed on the ceiling portion of the heatpipe (col. 6 lines 4-6, the explanation of the structure of the wick); and a wick formed on the internal side portions of the heatpipe to guide the coolant to flow toward the wick plate (all composing of wick plate 7 explicitly shown in fig. 1, also being disposed on the side wall).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the baking system of Hisai to include the wick plate on the ceiling portion and the wick on the internal side portions of a heat pipe as taught by Ikeda et al. in order to increase the effectiveness of heat dissipation inside a heat pipe.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Oda et al. (US 6,474,986) disclose a hot plate cooking method and heat processing apparatus; Hillman et al. (US 6,666,949) disclose a uniform temperature workpiece holder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Azim Rahim whose telephone number is 571-270-1998. The examiner can normally be reached on Mon - Thur 8am - 4:30pm Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AR 9/11/07

FRANTZ JULES
SUPERVISORY PATENT EXAMINER